IN THE UNITED STATES
PATENT AND TRADEMARK OFFICE

Appl. No. : 10/585,368
Applicant(s): Mathias Wendt, et al.
Filed: July 5, 2006
TC/A.U.: 2800/2836
Examiner: Adi Amrany
Atty. Docket: DE 040014
Confirmation No.: 2478
Title: DECENTRALIZED POWER GENERATION SYSTEM

APPEAL BRIEF

Commissioner for Patents
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Sir:

In connection with the Notice of Appeal dated **June 30, 2009**, Applicants provide the following Appeal Brief in the above-captioned application.

1. Real Party in Interest

The real party in interest as assignee of the entire right and title to the invention described in the present application is Koninklijke Philips Electronics, N.V., having a principal place of business at Groenewoudseweg, 1Eindhoven, NL 5621 BA .

2. Related Appeals and Interferences

As of the filing of the present Appeal Brief, there are no known related appeals or interferences.

3. Status of the Claims

Claims 1-19 are pending in the application. No claims are allowed and no claims are cancelled. Claims 1-19 are the subject of a final rejection. Claims 1-19 are the subject of the present Appeal and are reproduced in the Appendix.

4. Status of the Amendments

A response under Rule 111 was filed on February 27, 2009. A final rejection was mailed on April 7, 2009. A Notice of Appeal and a Pre-Appeal Request for Review were filed by June 7, 2009, and a Notice of Panel Decision from Pre-Appeal Review was mailed on July 30, 2009. No amendments are currently pending in the application.

5. Summary of the Claimed Subject Matter[1]

Referring to claim 1:

According to a representative embodiment, a decentralized power generation system (e.g., Fig. 4) comprises a plurality of decentralized power generating units (e.g., 11, 12, 13, 14, Fig. 4) and a plurality of DC/DC converters (e.g., 31,32, Fig. 4). None of

[1] In the description to follow, citations to various reference numerals, drawings and corresponding text in the specification are provided solely to comply with Patent Office Rules. It is emphasized that these reference numerals, drawings and text are representative in nature, and in not any way limiting of the true scope of the claims. It would therefore be improper to import any meaning into any of the claims simply on the basis of illustrative language that is provided here only under obligation to satisfy Patent Office rules for maintaining an Appeal.

DC/DC converters are configured to buffer energy. Each of the DC/DC converters (e.g., 31, 32, Fig. 4) is connected to a respective one of said power generating units (e.g., 11, 12, 13, 14, Fig. 4). When a voltage supplied from a respective power generating units meets or exceeds a threshold voltage, the associated DC/DC converter (e.g., 31, 32, Fig. 4) is configured to convert a current provided by the power generating units (e.g., 11, 12, 13, 14, Fig. 4). The decentralized power generating system comprises a DC bus (e.g., 40, Fig. 4) to which each of said DC/DC converters (e.g., 31, 32, Fig. 4) is coupled for feeding a respectively converted current into the DC bus; and at least one power receiving component (e.g., 50, Fig. 4) connected to the DC bus (e.g., 40, Fig. 3) for retrieving current from the DC bus (e.g., 40, Fig. 4). The power receiving component is physically separated from said DC/DC converters (e.g., 31, 32, Fig. 4). (Kindly refer to claim 1; page 9, line 1 through page 11, line 10 and Fig. 4 of the filed application.)

Referring to claim 10:

In accordance with a representative embodiment, a method (e.g, Fig. 6) of operating a decentralized power generation system (e.g., Fig. 4) is disclosed. The system comprises a plurality of decentralized power generating units (e.g., 11, 12, 13, 14, Fig. 4), a plurality of DC/DC converters (e.g., 31, 32, Fig. 4), none of which are configured to buffer energy, a DC bus (e.g., 40, Fig. 4) and at least one power receiving component (e.g., 50, Fig. 4), which is physically separated from said DC/DC converters (e.g., 31, 32, Fig. 4). The method comprises: generating a current by means of said plurality of power generating units; when a voltage supplied from a respective power generating units meets or exceeds a threshold voltage (e.g., Fig. 6), converting the current provided by each of the power generating units (e.g., Fig. 6) by means of a respective DC/DC converter (e.g., 31, 32, Fig. 4); feeding said converted currents (e.g., Fig. 6) into the DC bus (e.g., 40); and providing current from said DC bus (e.g., 40) to said at least one power receiving component (e.g., 50, Fig. 4). (Kindly refer to claim 10; page 9, line 1 through page 11, line 10 and Figs. 4-6 of the filed application.).

Referring to claim 11:

According to a representative embodiment, a decentralized power generation system (e.g., Fig. 4) comprises a plurality of decentralized power generating units (e.g., 11, 12, 13, 14, Fig. 4) and a plurality of DC/DC converters (e.g., 31, 32, Fig. 4), none of which are configured to buffer energy. Each of the DC/DC converters (e.g., 31, 32, Fig. 4) is connected to a respective one of the power generating units (e.g., 11, 12, 13, 14, Fig. 4) and, when a voltage supplied from a respective power generating units meets or exceeds a threshold voltage (e.g., see Fig. 6), the associated DC/DC converter (e.g., 31, 32, Fig. 4) is configured to convert a current provided by the power generating units. The system also comprises a DC bus (e.g., 40) to which each of the DC/DC converters is coupled for feeding a respectively converted current into the DC bus. The power receiving component (e.g., 50, Fig. 4) is connected to the DC bus for retrieving current from the DC bus (e.g., 40). A respective predetermined output voltage is set for each of the DC-DC converters (e.g., 31, 32), and the current provided by each of the DC-DC converters (e.g., 31, 32) is prevented from exceeding a respective predetermined maximum value. (Kindly refer to claim 11; page 9, line 1 through page 11, line 10 and Figs. 4-6 of the filed application.).

6. Grounds of Rejection to be Reviewed on Appeal

The grounds of rejection to be reviewed on Appeal are whether:

I. The disclosure is properly objected to for not including section headings;

II. Claims 1-19 are properly rejected under 35 U.S.C. § 112, ¶1 for allegedly failing to comply with the enablement requirement;

III. Claims 1-3, 8-13 and 18-19 are properly rejected under 35 U.S.C. § 103(a) as allegedly being obvious in view of *Jepsen, et al.* (US PAP 2005/0275386) and *Vinciarelli, et al.* (U.S. Patent 5,546,065);

IV. Claims 4-6 and 14-16 are properly rejected under 35 U.S.C. § 103(a) as

allegedly being obvious in view of *Jepsen, et al.*, *Vinciarelli, et al.* and *Ostojic* (U.S. Patent 6,771,052); and

V. Claims 7 and 17 are properly rejected under 35 U.S.C. § 103(a) as allegedly being obvious in view of *Jepsen, et al.*, *Vinciarelli, et al.*, *Ostojic* and Najemy (U.S. Patent 5,809,256).

7. Argument

I. Section headings are not a requirement

Section headings are not statutorily required for filing a non-provisional patent application under 35 USC § 111(a), but per 37 CFR § 1.51(d) are only guidelines that are suggested for applicant's use. (See "Miscellaneous Changes in Patent Practice, Response to comments 17 and 18" (Official Gazette, August 13, 1996) [Docket No: 950620162-6014-02] RIN 0651-AA75 ("Section 1.77 is permissive rather than mandatory. … [T]he Office will not require any application to comply with the format set forth in 1.77")). (See also MPEP § 608.01(a)).

Applicants respectfully submit that for at least the reasons set forth above, the objection to the specification is improper and should be withdrawn.

II. The rejection under 35 U.S.C. § 112, ¶1 is improper

In the response to Applicants' arguments set forth in the final Office Action, the Office Action asserts that insufficient support is provided in the specification for DC/DC converters that "do not buffer energy." Notably, claim 1, for example features *DC/DC converters none of which are configured to buffer energy*. The final Office Action also rejects claim1-19 under 35 U.S.C. § 112, ¶1 for allegedly failing to comply with the enablement requirement. Applicants respectfully demur.

Enablement is a question of law. *United States v. Telectronics, Inc.*, 857 F.2d 778, 785 (Fed. Cir. 1988) held that the test "is whether one reasonably skilled in the art could make or use the invention from the disclosures in the patent coupled with information known in the art without undue experimentation." If an application is without any description as to how to implement a claimed feature, it has been held that the claim necessarily requires undue experimentation in order for one of ordinary skill in the art to make or use them.

In describing certain advantages, the application recites:

"...it is an advantage of the invention that high direct currents provided by the power generating units do not have to be transferred a long way to a central power receiving unit, since the high direct currents can be converted immediately by the DC/DC converter associated to the respective power generating unit. Further, the invention enables a particularly simple modular and extendible mounting of the system.

...it is an advantage of the invention that those components of the system which are subject to adverse environmental conditions, for instance on a roof, can be constructed without electrolyte capacitors and thus in a way which ensures a long life and a high reliability. That is, the DC/DC converters can be arranged close to the power generating units, which may be subject to adverse environmental conditions, while the more sensitive power receiving component can be arranged at a sheltered location. Expensive components in the DC/DC converters can be avoided...

The presented PV power plant has further the advantage that the DC/DC converters 31, 32 required basically no buffering of energy. Therefore, no electrolyte capacitors, which reduce the durability of a device, are required in the DC/DC converters 31, 32." (See page 5, lines 15-25, and page 11, lines 1-4 of the filed application).

So, in at least the noted portions of the filed application, provides a description of the immediate conversion of high DC currents, and the DC/DC converters, which are disposed close to power generating units in possibly harsh environmental conditions, do not include electrolytic capacitors. Moreover, no buffering of energy is not needed. Thus, the features at issue in the present rejection are disclosed explicitly and in context in the filed application. Therefore, Applicants respectfully submit that one of ordinary skill in the art would garner the knowledge required at least to fulfill the requirements under 35 U.S.C. § 112, ¶1.

For at least the reasons set forth above, Applicants respectfully submit that based at least on the description in the noted portions of the filed application, the enablement requirement is met.

III. The rejection of claims 1-3, 8-13 and 18-19 is improper

A *prima facie* case of obviousness has three requirements. First, the prior art relied upon, coupled with the knowledge generally available in the art at the time of the invention, requires some reason that the skilled artisan would modify a reference or to combine references.[2] The Supreme Court has, however, cautioned against the use of "rigid and mandatory formulas" particularly with regards to finding reasons prompting a person of ordinary skill in the art to combine elements in the way the claimed new invention does.[3] But rather the Supreme Court suggests a broad, flexible "functional approach" to the obviousness analysis recognizing that "[i]n many fields it may be that there is little discussion of obvious techniques or combinations."[4] Second, the proposed modification of the prior art must have had a reasonable expectation of success, determined from the vantage point of the skilled artisan at the same time the invention was made. In other words, a hindsight analysis is not allowed.[5] Lastly, the prior art

[2] See Princeton Biochemicals, Inc. v. Beckman Coulter, Inc., 411 F.3d 1332 (Fed. Cir. 2005) ("[S]imply identifying all of the elements in a claim in the prior art does not render a claim obvious.").

[3] See KSR Int'l Co. v. Teleflex Inc., 127 S. Ct. 1727 (2007) ("The obviousness analysis cannot be confined by a formalistic conception of the words teaching, suggestion, and motivation, or by overemphasis on the importance of published articles and the explicit content of issued patents.").

[4] Id. See also Id. at 1743 F. 3d 1356 (Fed. Cir. 2006) ("Our suggestion test is in actuality quite flexible and not only permits, but *requires*, consideration of common knowledge and common sense") (emphasis in original).

[5] See Amgen, Inc. v. Chugai Pharm. Co., 927 F.2d 1200 (Fed. Cir. 1991) ("Hindsight is not a justifiable basis on which to find that ultimate achievement of a long sought and difficult scientific goal was obvious.").

reference or combination of references must teach or suggest all the limitations of the claims.[6]

A. Claims 1, 10 and 11

Claim 1 recites:

A decentralized power generation system, said system comprising:

a plurality of decentralized power generating units;

a plurality of DC/DC converters none of which are configured to buffer energy, wherein each of said DC/DC converters is connected to a respective one of said power generating units and, when a voltage supplied from a respective power generating units meets or exceeds a threshold voltage, the associated DC/DC converter is configured to convert a current provided by said power generating units;

a DC bus to which each of said DC/DC converters is coupled for feeding a respectively converted current into said DC bus; and

at least one power receiving component connected to said DC bus for retrieving current from said DC bus, wherein the power receiving component is physically separated from said DC/DC converters.

Claims 10 and 11 each include similar features to the emphasized features of claim 1, and are rejected with reference to the rejection of claim 1. Thus, Applicants traversal of the rejection of claim 1 applies in their traversal of claims 10 and 11.

As described in the filed application, the DC/DC converters of the representative embodiments beneficially do not require energy buffering. No electrolytic capacitors (or their equivalent) that are used for energy buffering are required. These devices reduce the durability of the DC/DC converter and thus are deleterious thereto. By contrast, the DC/DC converters of the representative embodiments do not require energy buffering and do not suffer the durability issues.

[6] See In re Wilson, 424 F.2d 1382 (C.C.P.A. 1970) ("All words in a claim must be considered in judging the patentability of that claim against the prior art.").

Jepsen, et al. does not disclose DC/DC converters that do not require energy buffering. The Office Action asserts that the threshold voltage is obvious in view of the reference to *Jepsen, et al.* However, no basis is provided for this assertion. Notably, the Office Action states:

"The DC/DC converter will not have any power to convert when a source is not supplying any power (during nighttime). The "threshold voltage" of Jepsen is interpreted as zero (0) volts. With zero volts, the power input to the converter also zero (P=V*I). Once a source begins to actually supply power (par.43, lines 1-5), the converter will convert a current supplied by that source."

At the outset, Applicants note that paragraph [0043], lines 1-5 do not describe a threshold voltage, but rather describes a DC/DC module A connected to a DC-bus 3 and the feeding of energy into the DC-bus:

"FIG. 1 shows how a DC/DC-module A is connected to a DC-bus 3, which is common to several other DC/DC-converters. They are all feeding energy into the DC-bus, and DC/AC-inverter B taps the DC-bus and converts the energy into a grid voltage and grid frequency."

However, neither in the portion of the applied art to which Applicants are directed, or elsewhere is there a disclosure ***a threshold voltage,*** or of the associated DC/DC converter's ***being configured to convert a current provided by power generating units***. Moreover, the Office Action sets the threshold voltage of *Jepsen, et al.* at zero volts, yet there is no disclosure or description of this in the noted portion of the applied art or elsewhere.

Moreover, the Office Action asserts that *Vinciarelli, et al.* discloses a DC/DC converter "that is comprised of a transformer and does not contain a capacitor." The Office Action directs Applicants to Fig. 2, columns 7-9 of *Vinciarelli, et al.* for support for this assertion. However, Fig. 2 is a linear circuit model the two winding transformer of FIG. 1. The model neglects intrawinding and interwinding capacitance (see column 7, lines 10-36 of *Vinciarelli, et al.* for support for this assertion.) Moreover, this is a circuit

model or construct, and therefore cannot suffice for the disclosure of features of the system as claimed.

While Applicants in no way concede that all features of claims 1-19 are disclosed in the applied art, Applicants respectfully submit that a *prima facie* case of obviousness has not been established because the requisite motivation to combine references is not provided in the Office Action.

If there is no suggestion to combine the teachings of the applied art, other than the use of Applicants' invention as a template for its own reconstruction, a rejection for obviousness is improper.[7] In furtherance to the need for the suggestion to combine the teachings of the applied art, it is established that rejections on obviousness grounds cannot be sustained by mere conclusory statements: instead there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.8

In combining *Jepsen, et al.* with *Vinciarelli, et al.*, the Office Action asserts that "At the time of the invention by applicants, it would have been obvious to replace the DC/AC and AC/DC converters in Jepsen with the DC/DC disclosed in Vinciarelli in order to reduce the number of parts in the converter."

First of all, there is no basis given as to how the supplanting of the DC/AC converter would reduce the number of parts. Moreover, there is no basis provided that such a move would accord the function desired, and that no energy buffering would be realized with such a change in parts according to the teachings of *Jepsen, et al.* or *Vinciarelli, et al.* Thus, Applicants respectfully submit that no clear support has been provided for the proposed transplanting the DC/DC devices of *Vinciarelli, et al.* for the AC/DC devices of *Jepsen, et al.* Accordingly, Applicants respectfully submit the requisite articulated reasoning with some rational underpinning to support the legal conclusion of obvious has not been provided. Rather, a generic benefit is asserted, and lacks support as to why it is useful and whether it will even effect the same result.

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[7] *Ex parte Crawford, et al.* Appeal 20062429, May 30, 2007
[8] *KSR Int'l v. Teleflex*, 127 S. Ct. at 1741.

For at least the reasons set forth above, Applicants respectfully submit that the applied art fails to disclose at least one feature of each of claims 1, 10 and 11; and the combination of references is improper. Thus, a *prima facie* case of obviousness has not been established, and claims 1, 10 and 11 are patentable over the applied art.

IV. Claims 4-6 and 14-16 are patentable

Claims 4-6 and 14-16 depend from claims 1 and 11, respectively. While Applicants in no way concede the propriety of the rejection, these claims are patentable for at least the same reasons as their respective independent claims.

V. Claims 7 and 17 are patentable

Claims 7-6 and 17 depend from claims 1 and 11, respectively. While Applicants in no way concede the propriety of the rejection, these claims are patentable for at least the same reasons as their respective independent claims.

Conclusion

In view the foregoing, applicant(s) respectfully request(s) that the Examiner withdraw the objection(s) and/or rejection(s) of record, allow all the pending claims, and find the application in condition for allowance.

If any points remain in issue that may best be resolved through a personal or telephonic interview, the Examiner is respectfully requested to contact the undersigned at the telephone number listed below.

Respectfully submitted on behalf of:

Philips Electronics North America Corp.

__/William S. Francos/_____

by: William S. Francos (Reg. No. 38,456)

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APPENDIX

Claims on Appeal

1. A decentralized power generation system, said system comprising:
a plurality of decentralized power generating units;
a plurality of DC/DC converters none of which are configured to buffer energy, wherein each of said DC/DC converters is connected to a respective one of said power generating units and, when a voltage supplied from a respective power generating units meets or exceeds a threshold voltage, the associated DC/DC converter is configured to convert a current provided by said power generating units;
a DC bus to which each of said DC/DC converters is coupled for feeding a respectively converted current into said DC bus; and
at least one power receiving component connected to said DC bus for retrieving current from said DC bus, wherein the power receiving component is physically separated from said DC/DC converters.

2. A decentralized power generation system according to claim 1, wherein each of said DC/DC converters is adapted to operate autonomously and to ensure a predetermined voltage on said DC bus.

3. A decentralized power generation system according to claim 1, wherein each of said decentralized power generating units is mechanically coupled to a respective DC/DC converter.

4. A decentralized power generation system according to claim 1, wherein said power receiving component is adapted to survey a voltage on said DC bus and to reduce the power retrieved from said DC bus when the voltage on said DC bus is detected to be decreasing.

5. A decentralized power generation system according to claim 1, further comprising at least one control line connecting each of said DC/DC converters to said at least one power receiving component, which at least one control line is arranged for switching on

and off said DC/DC converters.

6. A decentralized power generation system according to claim 5, further comprising at least one plug connection for electrically connecting a respective DC/DC converter in common to said DC bus and, via said control line, to said at least one power receiving component.

7. A decentralized power generation system according to claim 6, wherein said at least one plug connection is adapted to electrically connect a respective DC/DC converter to said DC bus before connecting said DC/DC converter via said control line to said at least one power receiving component and to interrupt the connection between said DC/DC converter via said control line to said at least one power receiving component before disconnecting said DC/DC converter from said DC bus.

8. A decentralized power generation system according to claim 1, wherein said power receiving component is an inverter arranged to convert a direct current retrieved from said DC bus into an alternating current and to feed said alternating current into an alternating current power supply system.

9. A decentralized power generation system according to claim 1, wherein each of said power generating units comprises at least one photovoltaic module.

10. A method of operating a decentralized power generation system, wherein the system comprises a plurality of decentralized power generating units, a plurality of DC/DC converters, none of which are configured to buffer energy, a DC bus and at least one power receiving component, which is physically separated from said DC/DC converters, said method comprising:
generating a current by means of said plurality of power generating units;

when a voltage supplied from a respective power generating units meets or exceeds a threshold voltage, converting the current provided by each of said power generating units by means of a respective DC/DC converter;
feeding said converted currents into said DC bus; and
providing current from said DC bus to said at least one power receiving component.

11. A decentralized power generation system, comprising:
a plurality of decentralized power generating units;
a plurality of DC/DC converters, none of which are configured to buffer energy, wherein each of the DC/DC converters is connected to a respective one of the power generating units and, when a voltage supplied from a respective power generating units meets or exceeds a threshold voltage, the associated DC/DC converter is configured to convert a current provided by the power generating units;
a DC bus to which each of the DC/DC converters is coupled for feeding a respectively converted current into the DC bus; and
at least one power receiving component connected to the DC bus for retrieving current from the DC bus, wherein a respective predetermined output voltage is set for each of the DC-DC converters, and the current provided by each of the DC-DC converters is prevented from exceeding a respective predetermined maximum value.
12. A decentralized power generation system as claimed in claim 11, wherein none of the DC-DC converters includes an electrolyte capacitor.

13. A decentralized power generation system according to claim 11, wherein each of the decentralized power generating units is mechanically coupled to a respective DC/DC converter.

14. A decentralized power generation system as claimed in claim 11, wherein the power receiving component is adapted to survey a voltage on the DC bus and to reduce the power retrieved from the DC bus when the voltage on the DC bus is detected to be

decreasing.

15. A decentralized power generation system as claimed in claim 11, further comprising at least one control line connecting each of the DC/DC converters to the at least one power receiving component, which at least one control line is arranged for switching on and off the DC/DC converters.

16. A decentralized power generation system as claimed in claim 15, further comprising at least one plug connection for electrically connecting a respective DC/DC converter in common to the DC bus and, via the control line, to the at least one power receiving component.

17. A decentralized power generation system as claimed in claim 16, wherein the at least one plug connection is adapted to electrically connect a respective DC/DC converter to the DC bus before connecting the DC/DC converter via the control line to the at least one power receiving component and to interrupt the connection between the DC/DC converter via the control line to the at least one power receiving component before disconnecting the DC/DC converter from the DC bus.

18. A decentralized power generation system as claimed in claim 11, wherein the power receiving component is an inverter arranged to convert a direct current retrieved from the DC bus into an alternating current and to feed the alternating current into an alternating current power supply system.

19. A decentralized power generation system as claimed in claim 11, wherein each of the power generating units comprises at least one photovoltaic module.

APPENDIX

Evidence (None)

APPENDIX

Related Proceedings (None)